

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An attitude determination and control system for a spacecraft comprising:

a unified attitude sensor set that is adapted for use during all phases of spacecraft operations; and

a processor capable of determining and controlling attitude of said spacecraft during said operations solely using sensor inputs from the unified attitude sensor set.

2. (Original) The attitude determination and control system of claim 1, wherein the unified attitude sensor set includes at least one star tracker.

3. (Original) The attitude determination and control system of claim 2, wherein star tracker data is used to determine spacecraft attitude for transfer orbit operations and on-station operations.

4. (Original) The attitude determination and control system of claim 2, wherein star tracker data is used at least in part to determine spacecraft rate.

5. (Original) The attitude determination and control system of claim 2, wherein star tracker data is used at least in part to determine spacecraft attitude.

6. (Original) The attitude determination and control system of claim 2, wherein the unified attitude sensor set further includes at least one inertial measurement unit.

7. (Currently Amended) The attitude determination and control system of claim 5 6, wherein the inertial measurement unit is a gyro device.

8. (Original) The attitude determination and control system of claim 7, wherein the gyro device is used at least in part to determine spacecraft rate.

9. (Original) The attitude determination and control system of claim 7, wherein the gyro device is used at least in part to determine the spacecraft attitude.

10. (Original) The attitude determination and control system of claim 7, wherein the star tracker data is used at least in part to determine the spacecraft attitude.

11. (Currently Amended) The attitude determination and control system of claim 7, wherein the attitude determination and control system uses the star tracker data ~~is used~~ to calibrate the gyro device.

12. (Original) The attitude determination and control system of claim 2, wherein the unified attitude sensor set further includes a solar panel current sensor.

13. (Currently Amended) The attitude determination and control system of claim 12, wherein the attitude determination and control system uses the solar panel current sensor ~~is used~~ at least in part to position the spacecraft body for power safety after loss-of-attitude.

14. (Currently Amended) The attitude determination and control system of claim 12, wherein the attitude determination control system uses the solar panel current sensor ~~is used~~ at least in part to position the solar wing for power safety.

15. (Currently Amended) The attitude determination and control system of claim 12, wherein the attitude determination control system uses the solar panel current sensor ~~is used~~ to validate an acquired stellar attitude.

16. (Original) The attitude determination and control system of claim 1, wherein the spacecraft operations include transfer orbit operations and on-station operations.

17. (Original) The attitude determination and control system of claim 16, wherein the transfer orbit operations include a bi-propellant transfer orbit operation.

18. (Original) The attitude determination and control system of claim 16, wherein the transfer orbit operations include an electrical propulsion transfer orbit operation.

19. (Original) The attitude determination and control system of claim 18, wherein the electrical propulsion transfer orbit operation is performed using a XIP engine.

20. (Original) The attitude determination and control system of claim 18, wherein the electrical propulsion transfer orbit operation is performed using a Hall Effect Thruster.

21. (Original) The attitude determination and control system of claim 1, wherein the processor includes electronic hardware.

22. (Original) The attitude determination and control system of claim 1, wherein the processor includes software.

23. (Original) The attitude determination and control system of claim 1, wherein the spacecraft has its solar wings stowed.

24. (Original) The attitude determination and control system of claim 1, wherein the spacecraft has its solar wings deployed.

25. (Canceled)

26. (Canceled)

27. (Currently Amended) An attitude determination and control system for a spacecraft comprising:

a plurality of star trackers adapted for use during all phases of spacecraft operations;

and

a processor capable of determining and controlling attitude of the spacecraft during the spacecraft operations using inputs from the star trackers as the sole source of attitude sensor data.

28. (Original) The attitude determination and control system of claim 27, wherein the spacecraft operations include transfer orbit operations and on-station operations.

29. (Original) An attitude determination and control system for a spacecraft comprising:

a plurality of star trackers and gyro units that are adapted for use during all phases of spacecraft operations; and

a processor capable of determining and controlling the attitude of the spacecraft during the spacecraft operations using inputs from the star trackers and gyros as the sole source of attitude sensor data.

30. (Original) The attitude determination and control system of claim 29, wherein the spacecraft operations include transfer orbit operations and on-station operations.

31. (Original) An attitude determination and control system for a spacecraft comprising:

a plurality of star trackers, gyro units and solar wing current sensors that are adapted for use during all phases of spacecraft operations; and

a processor capable of determining and controlling the attitude of the spacecraft during the spacecraft operations using inputs from the star trackers, gyro units and solar wing current sensors as the sole source of attitude sensor data.

32. (Original) The attitude determination and control system of claim 31, wherein the spacecraft operations include transfer orbit operations and on-station operations.

33. (Canceled)

34. (Canceled)